

**Demetri Kofinas:** 00:00:00 Today's episode of Hidden Forces is made possible by listeners like you. For more information about this week's episode or for easy access to related programming, visit our website at [hiddenforces.io](https://hiddenforces.io) and subscribe to our free email list. If you listen to the show on your Apple Podcast app, remember you can give us a review. Each review helps more people find the show and join our amazing community. And with that, please enjoy this week's episode.

**Demetri Kofinas:** 00:00:48 What's up everybody? My guest on this episode of Hidden Forces is Margaret Heffernan, former media CEO, award winning journalist, BBC documentary filmmaker, and bestselling author, whose book, "Willful Blindness," was named one of the most important business books of the decade by the Financial Times. And whose latest book, "Uncharted," addresses many of the core themes and subjects that have captivated my attention on this podcast for years.

**Demetri Kofinas:** 00:01:19 In today's conversation, Margaret and I explore many of the various phenomena that arise from our unhealthy relationship with the future, by tackling some of the misconceptions we hold about predictability and the dangers associated with trying to extrapolate from the past an unknowable future.

**Demetri Kofinas:** 00:01:39 History after all is an incomplete dataset. We know this because the future is full of things that have never been here before. New technologies, new drugs, new genes, new people, and new horizons previously unimagined. It's why we rely on analogies to describe the unprecedented. It's because we don't have words for it; they haven't been invented yet.

**Demetri Kofinas:** 00:02:07 If we want to successfully confront the unknown challenges to come in this century, we need to begin by acknowledging that we cannot plan for them. The best we can hope to do is prepare. And fortunately for us, Margaret Heffernan is just the person to help us do it.

**Demetri Kofinas:** 00:02:26 For anyone who is new to the program, Hidden Forces is listener supported. We don't accept advertisers or commercial sponsors. The entire show is funded from top to bottom by listeners like you. If you want to learn more about how you can support the program and gain access to our premium content, which includes an overtime feed full of exclusive conversations with guests, transcripts to every episode and show rundowns, which are beautifully annotated and illustrated documents that I put together ahead of each episode, as guides to the material we cover every week, head over to [patreon.com/hiddenforces](https://patreon.com/hiddenforces) to learn all about it.

**Demetri Kofinas:** 00:03:08 And with that, please enjoy this week's episode with my guest, Margaret Heffernan. Margaret Heffernan, welcome to Hidden Forces.

**Margaret Heffernan:** 00:03:21 Hi, it's really nice to be talking to you.

**Demetri Kofinas:** 00:03:24 I'm actually very excited to have you on. Your latest book was actually the first book of yours that I've read. And I really, I'm surprised, because your thinking is so much in line with many of the things that I ingest, the kind of writing and subjects that I'm interested in. And in many ways you cover so many of the themes that we've talked about on this show. I can't even name them off the top of my head, but I wrote them down in different places in the rundown when I was preparing.

**Demetri Kofinas:** 00:03:55 Maybe, for our listeners who aren't familiar with you or your work, can you give us a sense of your career development? It's also quite interesting; I've had people on the show who move from industry to industry. In your case, it seems like you spent most of your life and career in media, but in all the different places of it, as a writer, director, producer. You've done consulting or campaign management, and news, and music, and entertainment. So, I'm really fascinated to know how you got here.

**Margaret Heffernan:** 00:04:26 Well, it is as they say, a long and winding road, right? I mean, I started my career after I left university. I started working at the BBC, and I worked in radio and then television for 13 years. So, I started off in radio news, then I worked in radio drama, then I worked in radio documentaries. Then I moved to television factual programs and documentaries. And then I ended up producing and executive producing drama and documentaries. And then I thought, "Well, I'm quite young. And if I say I'm going to be doing the same thing for golly decades-"

**Demetri Kofinas:** 00:05:08 How old were you at the time?

**Margaret Heffernan:** 00:05:10 At the time I was 32, I think. And I thought, I feel I could probably do other things. And so, I persuaded the BBC to send me on a one month residential business course at the London Business School. Because I wanted to see how I measured up against people who I thought I was doing real work. Because I didn't think of my work as real work, because it was so much fun. And-

**Demetri Kofinas:** 00:05:37 So, you had the sense in your mind that work was supposed to be inherently unfun?

**Margaret Heffernan:** 00:05:41 Well, I just thought people who work in industry, as they call it here in the UK, that in that must be much harder. And I just didn't know, was I smart enough for that? So, I went off to London Business School for four weeks, and I thought, "Wow, the stuff I do is much harder than this stuff these people do. This is weird and not at all what I expected." Because one of the things that's really interesting about media is that the product cycle is often quite long. I know it was much longer than, but still it's quite long, which is you start working on a series or a TV show two or three years before it's going to air. So, your sense of the zeitgeist has to be really quite well tuned, because you're making something that you have to feel confident. Well, not just be relevant, but it's somehow on the money two or three years hence.

**Margaret Heffernan:** 00:06:33 And there are people who are absolutely brilliant like this. Mark Schivas who produced the original House of Cards was a classic case in point. That show went out the week that the Conservative Party started taking down Margaret Thatcher. It was spectacular. So, anyway, I looked at all these business people, I thought, "Well, sheesh! I could do this." So, I left the BBC and I ran a trade association for a film and television producers, which was offering independence, a lot of resources and negotiating clout collectively that they couldn't possibly have had on their own. And then my husband, who's a scientist, got a position at Harvard.

**Margaret Heffernan:** 00:07:14 And I was quite keen by then to go back to the States, because I felt that the recession in the UK had gone on for so long and was so deep. I couldn't imagine the UK actually recovering. And I thought, "I'm too young to die. Let's get out of here." So, we fetched up in Boston. I thought the media market there was super

slow and boring. Although I did do a project with the Car Talk guys, which was really fun, but got nowhere. But I thought that tech market was really interesting. And it was in the brief, brief summer of interactive CD-ROMs. And everybody knew they had to have audio and video, but they didn't really know why or what to do with it or how to make it interesting. That's how I got into tech. And then I just discovered, "Oh, I really love these people."

**Margaret Heffernan:** 00:08:03 I loved working in a space where, as we used to say, there were no footsteps in the sand. And I was lucky enough to work with some super, super brilliant creative engineers and software architects. And so, I did that until 2002. And then I thought, "Well, right, that's enough for that." The tech bust happened. I was pretty burned out, and I thought, "I do quite want my kids to grow up as Europeans." So, we moved back to the UK. I thought, "I want a business now with no employees." Because I hired and fired so many, so many people. And a friend of mine, who's a literary agent, suggested that I start writing. So, here I am.

**Demetri Kofinas:** 00:08:51 When did you write your first book?

**Margaret Heffernan:** 00:08:53 So, I wrote my first book, it came out in 2004. I wrote a very, I guess you'd say inflammatory cover story for fast company, after which lots of publishers came looking for me. So, my first book was about women in the workplace, which previously publishers had said to me, "There's nothing to write about. There are no issues at all. It's over." This is not the first time I've been kind of ahead of that. Anyway, then I wrote a book about the rise of female entrepreneurship, because in the course of writing the first book, I discovered that about 48% of businesses in the US are owned by women. And that this cohort of approximately 10 million businesses was much more successful than businesses on average. And I thought, "Why did I not know this when I was a female CEO in tech? And why do when I talk to women business leaders, do they don't know this? And why would I do tell them what I'm working on they say, where are you going to find these companies?"

**Margaret Heffernan:** 00:10:02 Well, with 10 million of them it wasn't really very difficult. So, I thought this was a big story. So, I wrote that book. And then I found that all anybody wanted to talk to me about was diversity campaigns women at work, and not the kind of deeper issues of what the lack of diversity costs. And so, I thought, "Ooh, yikes, I've written myself into a ghetto, which is just deeply, deeply marginalized. Everything in terms of talking about women at work is a marginal subject, generally owned by people with very little power and very little influence." And so, then I wrote two plays for the BBC about Enron, because I think I was the only playwright they knew who could also read a balance sheet.

**Demetri Kofinas:** 00:10:50 Fascinating. When did you... What's going on here? So, I think I did see that somewhere in your bio, but I must have not registered because it came sort of left field. Where did that come from? You wrote at a play about Enron, did you base it off of Bethany McLean's book?

**Margaret Heffernan:** 00:11:07 Well, I have a real soft spot for what I think of it as car crash business books. So, I love Bethany McLean's book. I love the smartest guys in the room in the same way that more recently I loved Theranos. But I'm always fascinated because I'm interested in how do these things happen. I'm not as interested in what, but how, what are the forces at work here? And the trial of Jeff Skilling and Ken Lay

really captivated me. And when Lay died, I was particularly interested because I read all of his obituaries and I thought, "Well, this is actually a really interesting guy." And I don't think at any point did he think he had ever done anything wrong. And so, I thought, "Well, that's kind of interesting."

**Margaret Heffernan:** 00:12:00 I'm sure when things go wrong, people maintain this really great intact sense of themselves as moral individuals. And I remember there's also a coverage of a story about the CEO of WorldCom after he'd been found guilty of fraud, weeping in his church saying I'm not a bad person. And this captivated me. So, in the course of researching the two plays, I read the transcript of the trial of Skilling and Lay. And I came across, which you hope you will come across when you plow through, hours and hours and hours and hours of dreary legal transcripts.

**Margaret Heffernan:** 00:12:41 I found a gem, which was at the end of the trial the judge, Simeon Lake, instructed the jury about the legal concept of willful blindness. Which says that if there are things you could know and should know and you manage not to know, the law deems that you've been willfully blind because you had an opportunity for knowledge that you sharked. And reading that, a chill went down my spine because I thought I am sure in the companies I'd run that there had been things I should have known and could have known. So, this is a super high standard.

**Demetri Kofinas:** 00:13:20 That therefore you are ethically responsible?

**Margaret Heffernan:** 00:13:23 Yeah.

**Demetri Kofinas:** 00:13:23 That being blind to it willfully is not an excuse?

**Margaret Heffernan:** 00:13:26 Correct. And this operated like a magnet among iron filings, because I thought of the Catholic church in Ireland, I thought of all the good Germans in the third rife. I thought about the fact that the bulk of child abuse is in families. And I thought, "This is something, this is really something." And so, my next book was a book called Willful Blindness, and it looked at all of those things as well as Enron and the banking collapse, and all those kind of horrors. And the Financial Times shortlisted it for one of the best business books of the year. They subsequently called it one of the most important books of the decade. And so-

**Demetri Kofinas:** 00:14:10 In what year? This was 2006?

**Margaret Heffernan:** 00:14:13 So that book came out 2011. So, it was very propelled by the banking crisis, which people said, "Oh, we couldn't possibly have seen it coming." And I could find documentary evidence of people in 2005 saying, "This is exactly what's going to happen." So, I did adopt a high standard in the sense that every case I studied, I had to have documentary evidence before disaster struck that people had been warned about it, which was evidence that it was possible to see it. There are cases where you couldn't possibly. But every case I looked at and there was no shortage of cases, there was tons of evidence that the problem was visible and it was knowable, and therefore it was indeed a case of willful blindness.

**Demetri Kofinas:** 00:15:00 How does one differentiate between, I don't want to get us to sidetrack because I do want to talk about Uncharted, which is why you're here, but how does

someone differentiate between an act of willful blindness and simply the result of feeling overwhelmed by the scope of the problem? That you yourself are just one person, a one cog in a machine and you just can't do anything. And if you do try and do something, you're just going to get squashed and the problem is going to persist.

**Margaret Heffernan:** 00:15:28

Well, so there are a couple of things. I think certainly I would say that I stand to behavior is a driver of willful blindness. Which is, if I feel I'm overwhelmed and I caught to anything, then I'm predisposed to start ignoring the problem. But of course, that just means the problem has more opportunity to grow and to get worse. So, you have a responsibility because you've seen it, but you've chosen to look away. And there is one of the features of bystander behavior, is that the more people who see something going wrong, the more likely it is that nobody will speak up. So, this raises really interesting questions around organizational culture and leadership, about how do you create an environment in which people feel it is safe to speak up?

**Margaret Heffernan:** 00:16:25

And I would argue as somebody who's run companies, that I would always want to run a company in which it was safe to speak up. Because I can promise you, there's no way running a company you know absolutely everything that's going on. I discovered after I'd fired him for different reasons that we had a case of sexual harassment in one of my companies. Now, anybody who knows me would know that I wouldn't have tolerated that, anybody who knows me would have known that I would not ever fire the messenger who brought me that piece of information, and yet nobody did. And afterwards, when I asked them, they said, "Well, you just had so much on your plate and probably it wasn't that bad."

**Margaret Heffernan:** 00:17:17

And that was kind of it. And so, in some ways the book is a kind of clarion call to speak up because of course, if you do something can happen. Whereas if you don't, it's guaranteed that nothing will happen. And I spend a significant part of my life these days, teaching a curriculum called giving voice to values, to help educate people how to speak up safely in a way that maximizes the chance of something positive coming out of it. Because in general, what I'd found was that most people feel there are only two options, are silence or standing on the table top and screaming. Also, I interviewed lots and lots of what I called Cassandras, other people called whistleblowers. And one of the things that I found about them was that contrary to mythology, these aren't weird cranky people. And they're certainly not the disgruntled employees that their bosses or employers like to make them out to be. They are typically the most dedicated employees you can find.

**Margaret Heffernan:** 00:18:28

And the reason they raise the alarm is because they really love their company. And they're distraught at the notion that it doesn't have the integrity that they imagined, and they're desperate to fix it. I also, because I mentor a handful of senior or chief executives at any one time. I can say, this is a problem that goes right to the top, which even really senior people are afraid to speak out. And I can promise you that very often when they do, things do get fixed. But those stories of course, A, nobody wants to say things went wrong, right? And also, they are not as exciting and dramatic as the whistleblower is tortured by his employer stories. Because they have a happy ending and usually things are resolved in quite an undramatic way.

**Demetri Kofinas:** 00:19:20 Yeah. There are a few things, one that come to mind. One is that we often conflate alarms with negativity. There's a sort of derogatory association with the word Cassandra or chicken little. But I'm also kind of, I think about the cultural differences also between organizations and even countries. Because years ago, I had the CEO of Olympus who had just left the company on my old TV show. And we discussed his experience being fired after having raised several or a series of alarm bells at the company around-

**Margaret Heffernan:** 00:19:53 This is Woodford, wasn't it?

**Demetri Kofinas:** 00:19:56 Yes. And he talked about how he was treated, and eventually he got basically booted out, he got the silent treatment. There was this whole story he gave about an ordinate layout of sushi in the conference room that he was invited to for a companywide meeting. And then they had a tuna sandwich for them at the other end of the table, very Japanese. We might have a chance, though I doubt we'll have a chance to speak about Willful Blindness in the overtime because I think there's so much to talk about with Uncharted. But if we do, we can certainly touch on it. And I'm sure the idea is will come back and forth. But when did you get the idea to write Uncharted? And tell our listeners what the book is about.

**Margaret Heffernan:** 00:20:35 Sure. Well, all of my books I think come about from noticing weird things that don't make sense to me and which won't leave me alone. And in this case, it was people kept asking me questions. And it wasn't only that I didn't know the answer to them, I didn't really understand why they were asking or why they were all asking me. So, in the run up to the Brexit referendum, people would say, "What do you think is going to happen, Margaret?" And I thought, "Well, I don't know. How could I know? Why do you think I know, like I have some magic power?"

**Demetri Kofinas:** 00:21:13 Isn't that always a funny thing when that happens, that's like a heuristic for knowing that something's going on when people start asking you about it.

**Margaret Heffernan:** 00:21:20 Yes. And the same thing happened with the Trump election. And I pondered on this and I thought, so I think what this is, is this is people imagining that the future sits behind a locked door and some of us are lucky enough to have a key and we can take a peek. It's a bit like peeking to the end of a detective story to find out the outcome. And I thought, but this is a fundamentally flawed idea because there is no door. There is nothing behind it. The future hasn't happened yet. So, it is implicitly, fundamentally unknowable. So, I felt, so this is a flawed belief about the future. And so, then I thought, "Okay, so, maybe it doesn't matter, just because you think it's weird it doesn't mean it matters."

**Margaret Heffernan:** 00:22:11 And the more I started thinking about it, the more I thought, "No, it does actually matter a lot." Because if you think that people know, some special people know, then you're really susceptible to whatever it is they want to tell you. And some of them might be telling you their honest best guess, but actually lots and lots of people these days seem to be selling you image of the future, which they're trying to control. And I think in this case, you know what particularly captivated my attention was a whole series of ludicrous predictions coming out of Silicon Valley. There's the eternal prediction about this is the summer of VR, right? This endlessly elusive moment. And there were endless predictions about driverless cars. And then there was one that just really bored

into my brain, which was one that said 47% of jobs will be lost to automation by 2035. And I thought, "Hang on a second, 47% exactly, seriously, by 2035?"

- Demetri Kofinas:** 00:23:21 Was that the New York Times article?
- Margaret Heffernan:** 00:23:24 No, it was a piece of work done from the Oxford Martin School here in the UK. But these numbers, the grittiness of these numbers went all over the wall. There was a big to do and tell us about them. The people who wrote the academic paper started consulting on it. And I got the original paper. And in the very first paragraph it says, "We are testing a brand new model for how to assess this?" And brand new model means we have no idea if the model works. So, everything about this was, it didn't have authority, it was flying a kite. And yet everybody instantly took it as fact. And this had impact in terms of engineers I worked with. Who said, "Well, I guess we're going to automate everything because that's the way of the future." So, it disabled people's critical thinking. It seemed to be so confident.
- Margaret Heffernan:** 00:24:29 And critical thinking is a big theme in everything I've ever written. And so, I just started digging, and that's essentially where the book started. There was one other thing, you'll gather by now I'm a collector of nerdy data points, which is I read Philip Tetlock's work. And somewhere in there, there's a reference to the fact that actually really good forecasting can only be thought of as reliable about 400 days out. And that's what people who have incredible rigor and integrity.
- Demetri Kofinas:** 00:25:05 So called super forecasters.
- Margaret Heffernan:** 00:25:07 Correct. And for the rest of us, it's about 150 days. And I thought, of all the companies I know doing five year plans, and there are some companies that are required by law to do 30 year plans. And I thought, "Well, this is ridiculous. This is absolutely ridiculous." And so, I thought, "Okay. So, if we buy this idea that the future, 400 days out, is unknowable, then almost everything we do in business and government and our own personal lives, it's really unplannable at length." So, what do we do? What do we do? The whole model from business schools of forecast plan execute, it just falls away. So, I thought that was a really good question. And all my books start really with questions. So, I was kind of hooked.
- Demetri Kofinas:** 00:26:08 Where do you think this comes from? Do you think this is, for lack of a better word, biological? That by our very nature we can't see a probabilistic landscape of future outcomes, we can only understand specific anecdotes or projections about a very particular type of future? And we also are fundamentally uncomfortable with the uncertainty that is just the nature of life?
- Margaret Heffernan:** 00:26:38 Yeah. I certainly think we're very uncomfortable with uncertainty. We definitely would like to know what's going on. And part of that is as simple as the fact that when something is uncertain, our brain keeps working on it, and that becomes quite tiring. It's also the case when you talk to mathematicians, they will say even they find probabilities counter-intuitive. So, although probabilities are useful for mathematical modeling, they're not terribly good for us. I remember having a conversation with a woman in Toronto, which I said what I was working on. She said, "Oh, forecasting is just useless. Today they said it wasn't going to rain and it rained." And I said, "Well, actually they didn't say rain it wasn't going

to rain, they said there was a 90% probability it wasn't going to rain. But so, you got the 10%, right? It wasn't an inaccurate forecast."

**Margaret Heffernan:** 00:27:35 So probabilities are useful for modeling, but I think they're not very helpful for decision making. And I know I've talked to senior leaders in the intelligence institutions, both in the US and the UK. And what they tell me is all of their briefing notes contain probabilities. And no politicians want to pay attention to them, they want certainty. And God bless them, the people in the intelligence services won't comply with that wish, which is correct, but there is this deep lust for certainty and for guarantees. And I think it's tough to adjust to the notion that we don't know. But I also think that knowing that we don't know, it gives us huge scope for exploration and invention, if we have the kind of energy and imagination to take the opportunity.

**Demetri Kofinas:** 00:28:38 Well, first of all, I want to make an observation. I'm just curious if you agree with it. It seems to me that more and more people are starting to think in the way that you are. I've seen an uptake of interest in the years since I started the show. But even before that, I think really after the financial crisis, I think oftentimes severe crises that test or reveal the fallibility of our models, create opportunities to rethink those models or look at the world anew. And I think that with the financial crisis came a lot of interest in complexity science, in certain inductive paths of reasoning about the world and things like this. I wonder to what extent you've seen this.

**Demetri Kofinas:** 00:29:20 And my next question was really going to be about one of my favorite chapters in the book, which was actually the very first chapter, False Profits. Because this is something by virtue of the work I'm in, I often interact with either people like this directly, or I certainly follow them and follow their work. And I have over the years as I've become more mature and gained more experience and learned more, I've really been able to differentiate between such individuals and people who are much more credible. And one of the biggest tells, one of the biggest red flags, is if someone speaks in certainties versus if someone is humble and speaks in terms of probabilities, possible outcomes. And always makes a point to emphasize that, the fact that ultimately, I don't know, we don't know, but this is why this seems to be perhaps more likely than this. But those are my two initial questions, take them as you will.

**Margaret Heffernan:** 00:30:18 Yeah. So, I would agree with you that I think there's more interest in this, and that certainly the financial crisis severely challenged people's belief in forecasting. And it is the first big institutional step that we took towards thinking about running organizations for robustness or resilience, rather than pure efficiency. So, the new capital requirements for banks really essentially accepted that you need a bigger cushion because you can't quite be sure what's going to happen. So, I would think that the interest in complexity in itself has been around for quite some time, really, I guess since the sixties. But I think people used to imagine, "Well, this is just for astrophysicists, right?"

**Margaret Heffernan:** 00:31:15 And I think what happened is it started to become much more obviously applicable to our institutions. But I think another thing really fundamental happened, which is that over, I would say the last 30 years, our world has moved generally from a place that was very complicated to a place that is generally complex. And they are absolutely not the same. So, complicated environments are linear. You can see all the factors at work. You have quite a lot

of control over it. And these are places or systems which are very, very well managed with efficiency. And that I think has been the overall mindset applied to business and to institutional management and leadership of all kinds. Complexity though, is a really, really different ball game, because now you can't see all the factors at work. And while there are patterns, they won't necessarily repeat themselves routinely. So, they're inherently unpredictable.

**Margaret Heffernan:** 00:32:27 Expertise alone isn't going to give you certainty because the systems change too quickly and too often for you ever really to be on top of them. And so, here efficiency really won't be your friend. And of course, the banks collapsed because they were managed with too much efficiency, too much efficiency applied to capital. So, I think slowly but surely people have come to understand this distinction. Though I'm still really struck by the fact that every time I explain it to an audience of business leaders, their eyes open wide and suddenly they understand things they didn't understand before. But I think we have moved into a place where complexity has simply become more and more and more relevant. And now we simply can't afford not to understand it.

**Demetri Kofinas:** 00:33:16 Yeah. That's uh, so many great points. I want to really highlight something you said there about the banking system, because I think another way to think about that is to equate efficiency with risk. And in the banking system, the types of efficiencies that were monetized by the banks led to inevitably or work correlated with higher levels of risk taking. And you could draw the same parallel with the hospital system. Hospitals become much more efficient, but as a result, they've taken on higher levels of risk for certain types of events, where unforeseen situations like COVID-19 create a higher demand than expected for beds, for respirators. And all of a sudden you have a crisis because you didn't have any redundancy in the system. And this is something that you talk about in Uncharted as well, and it resonates with me deeply.

**Demetri Kofinas:** 00:34:07 And I'm going to start actually now mentioning episodes that we've done on the show, which all came to mind when I was reading your book. And the one that came to mind among a number dealing with redundancy was episode I think 63 with Bill Janeway, where we talked about the innovation economy. And actually, this came up a number of times in your book, because his book, Doing Capitalism in the Innovation Economy, and our conversation dealt in part with this false notion that markets allocating capital efficiently is the best way to allocate capital at all stages of the innovation cycle. And yet there are times, and we know this just historically, as a matter of historical fact, that the government is the best and in some cases, only agent that can invest in certain types of situations, particularly seed stage technological innovation, the things that gave us the modern digital evolution. Whether we're talking about silicon chips, whether we're talking about the internet protocols, where the level of investment is so enormous and the level of waste that must be tolerated is enormous, that no private sector actor would ever participate.

**Margaret Heffernan:** 00:35:15 Well, I think that's exactly right. And of course, you're probably familiar with Mariana Mazzucato's work on this, and the degree to which government investment, wasteful investment is really what lies behind most of the gigantic innovations that Silicon Valley thinks it produced all by itself. And I wrote a book, after Willful Blindness I wrote a book called A Bigger Prize, which looks at how competition isn't actually as great as we think it is. And there's a big section in there looking at science and the degree to which you routinely find people

saying, "We need to just invest in winners in science. We need to make the ecosystem of science more efficient."

**Margaret Heffernan:** 00:36:02 And the truth of the matter is, that you can't spot the winners. There is no profile of a successful scientist who makes breakthroughs. There's no specific age, there's no specific moment, there's no specific background. And to the degree that you try to make science and innovation efficient, it means you're trying to... You think you know the outcome you want, but the whole point of innovation is, it's something you've never seen before. So, how can you only invest in surefire winners if you're trying to invest in something that you've never seen before? And I think what's quite interesting is that in quite a lot of places, and I would say the UK government is a classic example of this, they believe that you can be an efficient investor into something as complex as the ecosystem of a scientific innovation. Just means you strangle a lot of talent at us.

**Margaret Heffernan:** 00:37:05 And I'd also pick up your point about COVID-19 because when we look at why Germans particularly did so well during the COVID-19 pandemic, for years now they have been criticized for having an inefficient health system, which is they had quite a lot of empty critical care beds and quite a lot of extra beds. And everybody kept saying this is a waste of money. But the reason that there was such a low fatality rate in Germany, is submitted anybody got seriously sick with COVID-19, they went into hospital and got treated before they were at death's door. So, they were much more likely to survive. So, they had built a robust system. Whereas those of us in the US and the UK are the victims of an efficient system.

**Demetri Kofinas:** 00:37:58 Yes. I agree with that. And also, I think to properly decide whether to engage in an activity that is "wasteful", is really to answer two questions. One is, what are the costs in the event that something that you don't expect to occur or that you assigned to it a low probability of occurrence occurs? And the second is the probability, what is the probability of that occurring? And no one knows the answer to those questions and they are inherently bad political decisions. Because for the most part, it doesn't make sense to be the politician who pushes for the allocation of billions of dollars or billions of pounds of funding for something that never actually happens, or that actually has low probability of happening. So, this is also part of the problem that our, in some ways perhaps democracy is not even ideally adjusted for that type of investment.

**Margaret Heffernan:** 00:38:45 Well, I think that's right. And I think that as citizens, it's important for us to understand even the need in certain areas where there is high impact and high probability to invest ahead of a problem. I write in my book about the coalition for academic preparedness, we started doing this in 2016. And one reason why the Wellcome Trust and the Gates Foundation created the coalition, was because they were extremely alert to the problem that governments were not funding something which they saw as really critical and really dangerous.

**Margaret Heffernan:** 00:39:27 And one of the reasons why we have made historic headway in terms of developing vaccines for COVID-19, even though the outcome of all of those remains uncertain, is because actually we did not start from scratch this year. Because actually all the time we were not paying attention, lots of people had identified this as a high probability high impact problem which we needed to get ahead of. And even doing that work, they're going to be lots of these vaccines

that don't work. And people who don't understand the nature of innovation will call that waste, but it's an absolutely necessary part, if we're going to find anything that works.

**Demetri Kofinas:** 00:40:07 This also raises something else, which is the flip side of this is that people often describe the label black swan to events that are not black swans, that we're actually very much within the realm of possibility that have been thought out that had not been inconceivable. You mentioned a little earlier, I think you made mention of artists and you certainly talked about strangling ideas in their crib. And I'm reminded of an episode we did with Safi Bahcall on his book, Loonshots.

**Demetri Kofinas:** 00:40:32 And I just, I really loved learning about this period where Vannevar Bush was leading a big part of the creative part of this initiative to help nurture ideas, crazy ideas, most of which would be totally wasted and would lead to nothing, but some of which could be put into the pipeline and could help turn the war against the Nazis. And that's how we got microwave radar, something I learned when doing that episode. And the microwave radar of course, was what allowed the bombers over the Atlantic to sink German subs, and allowed supply lines to resupply Europe. And that's just one example of that, but time and again, and this comes up I think most clearly in your section talking about the cathedrals and the cathedral makers.

**Margaret Heffernan:** 00:41:18 Yeah. And I'm so glad you pulled that out because it's hard to have favorite chapters, but the chapter on cathedral projects is definitely one of my favorite, because it's partly because I live quite near to one of the great Gothic cathedrals of Europe. But the phrase cathedral projects is Stephen Hawkins, and it was about his grand endeavors that last longer than a human lifetime, and which the people who start them know will outlive them. And where there's huge uncertainty in terms of what there'll be and what will emerge. And the great Gothic cathedrals had no plans, they had no architects, they were basically started by stone masons who figured it out along the way. And of course, along the way created all sorts of tremendous architectural inventions and discovered all kinds of engineering laws, which there was no other way for them to discover.

**Margaret Heffernan:** 00:42:13 And I say that I think that CERN is a great cathedral project. And what's so interesting there is that the director general, Christopher Llewellyn Smith, who raised all the money for the Large Hadron Collider, was constantly being asked by governments, "But what are we going to get out of this?" And he always refused to say, because although CERN has generated enormous innovation in terms of all sorts of digital technologies, in terms of all sorts of solar technologies, in terms of microfibers and pet scanners and so on and so forth, his argument always was, "If I can tell you what we're going to get out of it, there's no point doing the experiment. All I can say is that historically we always have, and everybody gains from it because everything we do is released free to the world."

**Margaret Heffernan:** 00:43:09 And of course, nobody could have said, "Well, actually we think at some point we're going to need so many computers at CERN, that we're going to need at some point an operating system that talks to all of them. So, at some point we're probably going to invent something which at some point might be called the worldwide web." Right? This is a project that took 28 man years to produce,

not a single commercial company expressed any interest in it, but this is one of the byproducts of inefficient investment in innovation, an absolutely priceless invention.

**Demetri Kofinas:** 00:43:52 There's so many wonderful intersections. I pulled many quotes for subscribers to our rundowns. I have so many quotes from your book in here. One of my favorite ones was, you write, "While we can still be generally certain about many things, much remain specifically ambiguous." You use this, you apply it elsewhere, but I actually want to apply it in the internal creative process. I think when you speak to artists, they will tell you they don't oftentimes know how they got to where they got, but they had faith that they would get there. In other words, they could be generally certain, and of course, there's always doubt, especially in the creative process, that they'll be able to create something. When you sit down to write your book you have faith that you'll be able to create something and potentially something really wonderful, but you have no idea what it will be or how it will come about.

**Demetri Kofinas:** 00:44:45 And I think you also talk about this in the book, that there's something almost inherently contradictory about trying to create a culture of innovation or a culture of creativity. Because if that is, you specifically want something to come out of it. That forcing something specific. And the greatest inventions that I've ever read about or the greatest inventors, what they've created oftentimes just came out of tinkering. Claude Shannon wrote his paper on information theory in his spare time. He's just messing around. Again, this reminds me of an episode with David Epstein. And also, we did an episode on Claude Shannon with Jimmy Soni. Claude Shannon spent a bunch of time. Vannevar Bush sentiment to the Cold Spring Lab, Cold Spring Harbor to learn about DNA. There was no... But these things all matter, these things all come together. And cathedrals are extraordinarily inefficient. Art is the ultimate inefficient invention, but again, the greatest inventions come from unfettered creative work, which leads to tons of waste, but to that one incredibly beautiful gem that can save even all of humanity.

**Margaret Heffernan:** 00:45:56 Yeah. And it's really fascinating I think with artists, because absolutely they start in uncertainty. They have faith or hope, or sometimes not even that they just cannot do it. I think most of the artists that I've had the privilege to work with, and I've worked with lots of visual artists, musicians, actors, poets, playwrights, they had a sense of moving towards something but they definitely couldn't tell you when they started what it would be, or they have quite a lot of doubt along the way. And even when they arrive, they're often not quite sure what they've made. I think as a writer, one of the most gut wrenching stories in the book, was the one that Sebastian Barry told me when he was writing his book *Days Without End*, which is he spent nine months writing this long opening and then woke up one morning and threw out all but a few pages of it, and started again and had found in himself a whole new style of writing. And that book became an enormous success.

**Margaret Heffernan:** 00:47:06 Now, at no point did he see that's what was going to happen. And I have to say to you, the prospect of throwing away nine months work is absolutely heart stopping. In addition, I'm very interested because I've read a couple of books recently for different reasons about creativity. And I'm really struck that all of them measure the success of creativity by sales. And I think, "Hmm, why are they doing that?" Well, they're doing that because they're trying to look

scientific and rigorous in an area which is wildly subjective. And I think that's probably a mistake. So, for example, if you were going to measure Shakespeare's plays in terms of what's the best play, if you'd measured that in the 19th century, King Lear would not have been on the list because it was just never produced, it was just regarded as a nightmare.

**Margaret Heffernan:** 00:48:07 And it would probably still not make the top of the list. But I think anybody who says this is not one of Shakespeare's greatest plays, he is out of their mind, right? So, we have become so obsessed with this notion that we can measure everything somehow, and the measurement will tell us the truth. And I don't think the number of performances of King Lear from the day it was written to now, tells you any kind of thing truth about King Lear. Now, when you just going back to your point about the culture of innovation, I work with lots of companies that ask me, "Margaret, what can we do to make our culture more innovative?"

**Margaret Heffernan:** 00:48:48 And typically I ask them what they are doing. And quite often the answer is, well, I think first of all, what you have to do is just stop doing all of that. Stop the measurement, stop the contest, stop the deadlines. Just take all this structure out and stop making it something that only special people get to do innovation. And give people a bit of time and breathing space and see what happens. But if you don't have some faith in the inefficiency of the project, I don't think you're necessarily going to get very much or you're going to get stuff people do on the side in their own time as Dorsey & Co. Did while they were working at Google. And when they've invented it, they're going to take it somewhere else.

**Demetri Kofinas:** 00:49:39 There's so many, again, so many things come up, I'm thinking again now of a conversation that I had with Jerry Colonna on this show. And yeah, and we talked about, we share a common love, though of course, this is part of his career and he spends his time on this. But as an amateur I've read the works of Joseph Campbell, Carl Young, and of course, so much Greek mythology and many of the plays of Aeschylus and others who worked with myth. And we talked about that and we talked about this in the context of myths and things like this, but one of the things that he wrote in the book and we talked about it on the episode was that, that we know the road is windy, i.e., we know the future is uncertain and yet we still want to know which way leads to bliss.

**Demetri Kofinas:** 00:50:26 We want to know how the story ends. We want to know that we'll write the book and it will be a bestseller and that everyone will love us. And yet we know that in order to write that incredible book, we have to be okay with uncertainty. We have to be okay not just with uncertainty, but with wasting nine months of work. And I've never had to waste nine months of work, but my best writing has always come when I've been willing to throw out everything I wrote and just say, "You know what? That was just what I needed to do in order to write the next thing." And hopefully the next thing is the thing, and I won't have to throw it out. But I want to say one more thing and then maybe what you could just do is just give me your thoughts about it rather than ask a pointed question.

**Demetri Kofinas:** 00:51:08 And then again, I mentioned another person who I really enjoyed having on the show and whose book was one of my favorite books that I had read in the entire time that I had her on this program, which was Shoshana Zuboff who you mentioned in your book. And her work in particular illuminated the problem of surveillance capitalism in a way that I had not up until that point been able to

articulate, neither to the audience, to others or to myself. And it had to do with this regimented need for certainty, to the point where we've moved past the state of predicting people's behavior to the place where we are actually guiding them to outcomes that ensure our own financial accumulation success.

**Demetri Kofinas:** 00:51:51 And so, I think there is this tension in the world we live in today, again, to your point, these people writing books about creativity with trying to measure it in some way or another. I think we're attracted to models into science, just like in the first chapter of your book where these three economists were applying methods to markets that are simply incompatible with a complex dynamic nonlinear system. And so, we want to have certainty, we want to be able to measure, and yet those things are inherently incompatible with what makes us human beings, and with what makes life worth living. And ultimately, I think you'd probably agree what can allow us to live the longest life as a species, because we need to have that convexity in outcomes that comes with serendipity.

**Margaret Heffernan:** 00:52:36 Yeah, I completely agree. And this is partly also what drove me to write the book, because I remember one day I was standing in a train station waiting for a train to come. And it was one of those things where maybe there was two or three minutes before the train was due to arrive. And I thought, so I'm certain the train will arrive, I have every reason to be certain. And as a consequence, the two to three minutes is meaningless. I'm simply waiting. And I thought, so if I knew everything that was going to happen in my life, if I could be absolutely certain every day everything that would happen, would that make me feel good? And I thought, no, it would be like spending your whole life on the train station simply waiting for the next thing to come, and the next thing to come, and the next thing to come. And now life is nothing more than a prescribed to do list.

**Margaret Heffernan:** 00:53:35 And the big reward is when you get to the end of it, you're dead. And so, uncertainty is actually our visceral experience of life. It's our sense that I could do this or that, I could go here or there, I could eat this or that. I have choices that it's actually an uncertainty that we discover freewill. Now, I think as Shoshana Zuboff writes so eloquently, that is exactly what the titans of Silicon Valley wish to take away from us. They wish to make us predictable. And why I would say in the first generation of the internet, there was a sense that if we knew enough about people, we could predict what they wanted and serve it to them. I think actually what Silicon Valley has discovered is actually it doesn't work. People are so much more than their data. And even if you put monitors all over the place, which obviously is the business model, you actually can't predict what they're going to do because people do have free will and they use it.

**Margaret Heffernan:** 00:54:42 And therefore internet 2.0 or 4.0, depending on how you're counting these things, is about forcing people to behave according to models that are known to be profitable. And I think in that insight, she's absolutely brilliant. It's a brilliant culmination of a brilliant life's work. I feel so strongly that this is what we have to resist because I don't want to be essentially the automaton delivering my life in the form of money to Silicon Valley. I can't think of a more profound pernicious destroyer of human value. And so, our lust for certainty really undermines our freedom, because it means that we're highly tempted to hand our freewill over to those whose interests are seriously not our own. And it's why it's so important for us to understand that actually uncertainty doesn't

leave us helpless, it doesn't leave us passive, it doesn't mean we can't do anything. It means we have to take more agency in our lives and seize it by the scruff of the neck, and make the future what we want and need it to be, and not let somebody else co-opt it.

**Demetri Kofinas:** 00:56:02 As you write in your book, absolute certainty about all aspects of life would be tyranny. And this is Shoshana's instrumentalism, it's the modern analog of, to use a dangerous analogy, of totalitarianism. And to a further point something you mentioned, I think you mentioned Brownian motion in the book, but we know that even on an atomic level, human beings are fundamentally unpredictable. And so, ultimately at the limit, if we want to create a society that we can predict perfectly, we have to control it. That's the only way to do it.

**Margaret Heffernan:** 00:56:35 Well, if we want to have society where everything is predictable, then we have to hand over all of our freedom. And we have to decide that actually the autonomous vehicle is us, right? That we're being guided by GPS, that we're having everything in our lives decided for us. And while clearly this is staggeringly profitable for the titans of Silicon Valley, it is a gross abuse of what it means to be human. And I'm just endlessly perplexed by the creative kind of death of imagination, which that so-called vision implies. I mean, all of this technology, all of his brain power to deliver on a vision that's meager and miserable. And I think what it shows is that the capitalism that is driving Silicon Valley is fundamentally dreary. It's just about, wow, the stock price goes up as if that is now gone.

**Demetri Kofinas:** 00:57:46 Wow. That is true. That opens up a whole other front. This is something that I was actually thinking of a lot yesterday, but I've been thinking about it for a while, which is our capital markets are totally broken. And we have become... our financial markets have truly become a casino in every sense of the word today. I don't know what's going on in the UK, but here in the US and people are using their stimulus checks to go on Robinhood and buy bankrupt stocks and bid them up. They're buying all sorts of cryptocurrencies. I had a call with the founder of a cryptocurrency yesterday, and this thing has been just booming in price. It's been just going through the rankings. And I talked to him for 90 minutes and there's nothing there. It doesn't work as advertised.

**Demetri Kofinas:** 00:58:33 And the entire premise of this thing is false, and yet people are buying it, they're buying it. And the thing that struck me was even if I sat down and wrote an article for CoinDesk and explained exactly why this thing, who these major investors are invested in is total garbage and it's either a fraud or the people that started just don't know what they're doing, it wouldn't matter. Actually, I don't think it would actually matter because no one's... Actually, if you look at the Telegram channels, and the Discord channels, and the 4chan channels, and the subreddits where people are discussing this, where all the energy and the momentum around the purchases are coming from, people actually don't care what it does, they just care that it's going up. And this is again, like in the late nineties, we had these bubbles in technology stocks, but there was an underlying narrative, there was this futuristic optimistic narrative around it.

**Demetri Kofinas:** 00:59:22 Today, there's nihilism in the marketplace. And I just think it's incredibly dangerous. So, Ms. Heffernan, I want to move us into the overtime. I want to continue this conversation, I'd love to hear your thoughts about it and also about nihilism. Because I think this also, this comes up in this movement of

transhumanism, which you talk about in the book and something we've talked about a few times on this show. It's something I'm fascinated by. I don't understand why more people don't see this as just another version of the elusive quest for the fountain of youth and death denying. And Ernest Becker talks about this and others have talked about this. We have a very juvenile immature disconnected relationship to death, and I think also to youth in our society, I'd love to talk to you about this.

**Demetri Kofinas:** 01:00:11 There's something else also that you write in the book, you call it automation paradox. And we've talked about this or a parallel part of it on this show as learned helplessness. And we see this phenomenon everywhere. We see it in our markets with the rise of passive investing. And people simply every month just putting money in. And these allocators just allocating non-discretionarily, not based on value, not based on some outside conception, but simply mechanically. And we see this everywhere. We see this with GPS. And it's concerning. In an increasingly complex world, it's very concerning that the operators are taking their hands off the wheel. And I'm thinking out loud but I forget who, I think it was the defense secretary of the Clinton administration, I'm blanking on his name, in the 90s.

**Demetri Kofinas:** 01:00:58 He was recently speaking about this and he's made this point that he thinks, and others have as well, that we're at greater risk of nuclear war today than we ever were. And that our systems are engineered for a world of mutually assured destruction, and that the greatest threat of nuclear war is an adversary. But in fact, the greatest threat of nuclear war according to him and others is actually a mistake, a mistake. So, these are just some of the things that I want to talk to you about today, and also perhaps get into some of the practical ways in which we cannot plan for the future, but perhaps prepare. And scenario planning is just one of those things. You also talk about experimentation and also cultivating our imagination, our capacity or room for imagination.

**Demetri Kofinas:** 01:01:43 For regular listeners, you know the drill, if you're new to the program, Hidden Forces is listener supported. We don't accept advertisers or commercial sponsors, the entire show is funded from top to bottom by listeners like you. If you want access to our premium content, which includes transcripts to every conversation we've ever had on the program, copies of my rundowns, which are elaborate show documents created by me ahead of every episode, or if you just can't get enough of the podcast and you want to hear more from my guests, head over to [patreon.com/hiddenforces](https://patreon.com/hiddenforces) and subscribe. Not only is the content worth it, but it's a great way to show your support for the show and the work we do. Margaret, stick around. We're going to move the second part of our conversation into the overtime.

**Margaret Heffernan:** 01:02:36 Great.

**Demetri Kofinas:** 01:02:37 Today's episode of Hidden Forces was recorded in New York City. For more information about this week's episode, or if you want easy access to related programming, visit our website at [hiddenforces.io](https://hiddenforces.io) and subscribe to our free email list. If you want access to overtime segments, episode transcripts, and show rundowns full of links and detailed information related to each and every episode, check out our premium subscription available through the Hidden Forces website, or through our Patreon page at [patreon.com/hiddenforces](https://patreon.com/hiddenforces). Today's episode was produced by me and edited by Stylianos Nicolaou. For

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